AMENDMENTS TO THE CLAIMS

1. (Currently amended) A gel matrix comprising a hydrated gel comprising pores having a size to sieve molecules of a desired size range by electrophoresis or magnetophoresis and one or more SERS-enhancing nanoparticles stationary within the gel.

2. (Original) The gel matrix of claim 1 comprising a plurality of the nanoparticles to provide a plurality of unique optical signatures

3. (Original) The gel matrix of claim 2, wherein the SERS-enhancing nanoparticles comprise one or more Raman-active tags independently selected from the group consisting of nucleic acids, nucleotides, nucleotide analogs, base analogs, fluorescent dyes, peptides, amino acids, modified amino acids, organic moieties, quantum dots, carbon nanotubes, fullerenes, metal nanoparticles, electron dense particles and crystalline particles.

4. (Original) The gel matrix of claim 1, wherein at least one of the nanoparticles has a net charge.

5. (Original) The gel matrix of claim 1, wherein the nanoparticles each provide a unique SERS-signal that is correlated with binding specificity of the probe of the nanoparticle.

6. (Original) The gel matrix of claim 1, wherein the Raman-active tag comprises adenine or an analog thereof.

7. (Original) The gel matrix of claim 1, wherein the nanoparticles are composite organicinorganic nanoparticle (COINS) comprising a core and a surface, wherein the core comprises a metallic colloid comprising a first metal and a Raman-active organic\compound..

8. (Original) The gel matrix of claim 7, wherein the COINS further comprise a second metal different from the first metal forming a layer overlying the surface of the nanoparticle.

9. (Original) The gel matrix of claim 8, wherein the COINS further comprise an organic layer overlying the metal layer, which organic layer comprises the probe.

10. (Original) The gel matrix of claim 1, wherein the probe is selected from antibodies, antigens, polynucleotides, oligonucleotides, receptors and ligands.

11. (Original) The gel matrix of claim 10, wherein the probe comprises a polynucleotide.

12. (Previously presented) The gel matrix of claim 1, wherein any of the nanoparticles may further comprise a fluorescent label that contributes to the optical signature.

13-32. (Canceled)

33. (Currently amended) A system for detecting an analyte in a sample comprising a gel matrix comprising a hydrated gel comprising pores having a size to sieve molecules of a desired size range by electrophoresis or magnetophoresis and one or more SERS-enhancing nanoparticles stationary within the gel, the SERS-enhancing nanoparticles within the gel having an attached probe that binds specifically to an analyte; a sample containing at least one analyte; and
an optical detection system suitable for detecting SERS signals from the nanoparticles.

34. (Original) The system of claim 33, further comprising a computer comprising an algorithm for analysis of the SERS signals obtained from the sample.

35-93. (Canceled)

94. (Previously Presented) The gel matrix of claim 1, wherein the SERS-enhancing nanoparticles within the gel have an attached probe that binds specifically to an analyte.